

## EMNERAPPORT – INSTITUTT FOR BIOMEDISIN

ANNUAL EVALUATION REPORT – DEPARTMENT OF BIOMEDICINE

Emnekode: <i>COURSE CODE:</i>	<b>BMED360</b>	Semester / år:	<b>Spring semester 2019</b>
Emnenavn: <i>COURSE NAME:</i>	<i>In Vivo Imaging and Physiological Modelling</i>	SEMESTER / YEAR:	
Emneansvarlig: <i>COURSE COORDINATOR:</i>	<b>Arvid Lundervold</b>	Godkjent:	Studieleder IBM 05.03.2020
Rapporteringsdato: <i>DATE OF REPORT:</i>	25 February 2020	APPROVED: (admin.)	

### INNLEDNING / INTRODUCTION:

Kort beskrivelse av emnet, inkl. studieprogramtilhørighet. Kommentarer om evt. oppfølging av tidligere evalueringer.

*SHORT COURSE DESCRIPTION, INCLUDING WHICH STUDENTS/CANDIDATES MAY ATTEND. COMMENTS TO CHANGES BASED ON PRIOR EVALUATIONS.*

*In Vivo Imaging and Physiological Modelling* (10 ECTS) is a course mainly offered to students with a background in physics, computer science, mathematics or statistics, on bachelor level. The course is also among courses that have been offered for PhD candidates attending the (previous) Norwegian Research School in Medical Imaging, <http://www.ntnu.edu/medicalimaging>

The goal of the course is that the participants shall obtain theoretical and practical knowledge on functional and quantitative in vivo imaging in man and animal using magnetic resonance imaging (MRI) and computer-based image analysis.

8 students were registered for the course this semester;

- 1 Master student in Biomedical Sciences (MAMD-MEDBI),
- 2 Master's students in Health Sciences (MAMD-HELSE) for Radiographer/Bioingeneer, and
- 1 visiting PhD candidate with a one-year study right (ÅRMO) at The Faculty of Medicine, as well as
- 1 Master student in Chemistry (MAMN-KJEM),
- 1 PhD candidate (PHDMN), and
- 1 former Master student in Applied and Computational Mathematics (MAMN-MAB) at The Faculty of Mathematics and Natural Sciences, and finally
- 1 visiting student through an Erasmus+ agreement (INTL-SV) at The Faculty of Social Sciences.

Of these 8 attendees, 6 of them attended the exam.

For course descriptions, visit the repository <https://github.com/computational-medicine/BMED360> publicly available containing all lectures and labs with computer code and data (Spring 2019 version), and the official <http://uib.no/course/BMED360>

For previous evaluation reports, please visit <https://kvalitetsbasen.app.uib.no/popup.php?kode=BMED360>

**STATISTIKK / STATISTICS (admin.):**

Antall vurderingsmeldte studenter:

**8**

Antall studenter møtt til eksamen:

**6***NUMBER OF CANDIDATES REGISTERED FOR EXAMINATION:**NUMBER OF CANDIDATES ATTENDED EXAMINATION:*

Karakter- skala GRADING SCALE	«A-F»	A:	B:	C:	D:	E:	F:
		2	3	1	-	-	-

**KOMMENTARER TIL KARAKTERFORDELINGEN / COMMENTS TO THE STATISTICS:**

Emnerapporten utarbeides når sensuren etter ordinær eksamen i emnet er klar. For muntlige eksamener er da resultatfordelingen endelig, men for skriftlige eksamener kan endelig resultatfordeling avvike noe om evt. klagebehandling ikke er fullført.

*THIS REPORT IS PREPARED AFTER ORDINARY EXAMINATION. FOR ORAL EXAMS, THE RESULTS ARE FINAL, FOR WRITTEN EXAMS, THE FINAL GRADING DISTRIBUTION MAY DIFFER SLIGHTLY IF CANDIDATE COMPLAINTS/APPEALS HAVE NOT BEEN PROCESSED.*

The final grade is based upon an oral presentation of a personal project (80%) in combination with a MCQ / Quiz test (20%). In order to pass, the students also have to get approved a midterm assignment "The kiwifruit segmentation challenge".

**SAMMENDRAG AV STUDENTENE SINE TILBAKEMELDINGER / SUMMARY OF EVALUATIONS GIVEN BY THE STUDENTS**

Spørreundersøkelse via Mitt UiB, annen evaluering, tilbakemelding fra tillitsvalgte og/eller andre.

*COURSE EVALUATION ON MITT UIB, OTHER EVALUATIONS, RESPONSES FROM THE STUDENT REPRESENTATIVES AND/OR OTHERS.*

The students were asked to give their feedback in a short survey at Mitt UiB. Some of these questions were Multiple Choice Questions (MCQ), while others opened up for the students to give their own opinion as written text. The attendees were asked about the academic content, the organization and the educational level of the teaching, and to evaluate the total workload of the course. In addition to these, the students were asked if they have had a previous course in this subject, and to give their responses about what they found good and bad about the course lectures and exercises, and what they appreciate about the course, or found disappointing.

The survey was open from 5<sup>th</sup> June until 7<sup>th</sup> June, while the oral exam took place 7<sup>th</sup> June. Information about the survey was given by an announcement on the course page at Mitt UiB when the survey opened.

2 of 8 students (25 %) gave their responses this semester, representing 2 different study programmes. One of these answered only a couple of the first questions, and did not give any feedback in his/her own words.

With only 2 students giving their response, it is hard to conclude.

Feedback in short: Workload a bit higher than expected. Academic content somewhat complicated. Educational level of teaching very high and the structure of the course was well organized. Course lectures sometimes (too) fast, but easy to ask questions and many illustrative examples were provided. Laboratory exercises somewhat useful, partly well organized. Example jupyter notebooks "workes really well" (additional notebooks on basic coding "for dummies" could be useful) "... the material is very useful for a broad array of fields, which makes it much more appealing than courses that are aimed at one specific field or use". Tight schedule, little time for preparing between classes.

**EMNEANSVARLIG SIN EVALUERING OG VURDERING / EVALUATION AND COMMENTS BY COURSE COORDINATOR:**

Faglæreres vurderinger av emnet. *TEACHER COMMENTS.*

Eksempel: Kommentarer om praktisk gjennomføring, undervisnings- og vurderingsformer, evt. endringer underveis, studieinformasjon på nett og Mitt UiB, litteraturtilgang, samt lokaler og utstyr.

*EXAMPLE: COMMENTS ABOUT PRACTICAL IMPLEMENTATION, TEACHING AND ASSESSMENT METHODS, IF NECESSARY. FUTURE CHANGES/CHANGES IN PROGRESS, STUDY INFORMATION ON THE INTERNET AND MITT UIB, LITERATURE ACCESS, LOCALES AND EQUIPMENT.*

See “Feedback in short” and Planned changes for the next teaching period”.

The Histological 1 (and 2) venue works very well for both students and teacher (projector, chalk blackboard, power supply for laptops).

The course is fully contained on GitHub (Mitt UiB is a not-critical supplement), making it easy to maintain, deploy, modify, disseminate and make accessible to students before, during, and after the condensed teaching period.

**MÅL FOR NESTE UNDERVISNINGSPERIODE – FORBEDRINGSTILTAK / PLANNED CHANGES FOR THE NEXT TEACHING PERIOD – HOW TO BE BETTER:**

- Jupyter notebook “for dummies” (considered for BMED360-2020)
- More focus on a subset of the topics covered by the course (e.g. diffusion MRI, supervised and unsupervised image segmentation, machine learning, neural networks in man and machine, deep learning)
- Developing the course for the next teaching period on <https://github.com/arvidl/BMED360-2020> (Private), making it public as <https://github.com/computational-medicine/BMED360-2020>